



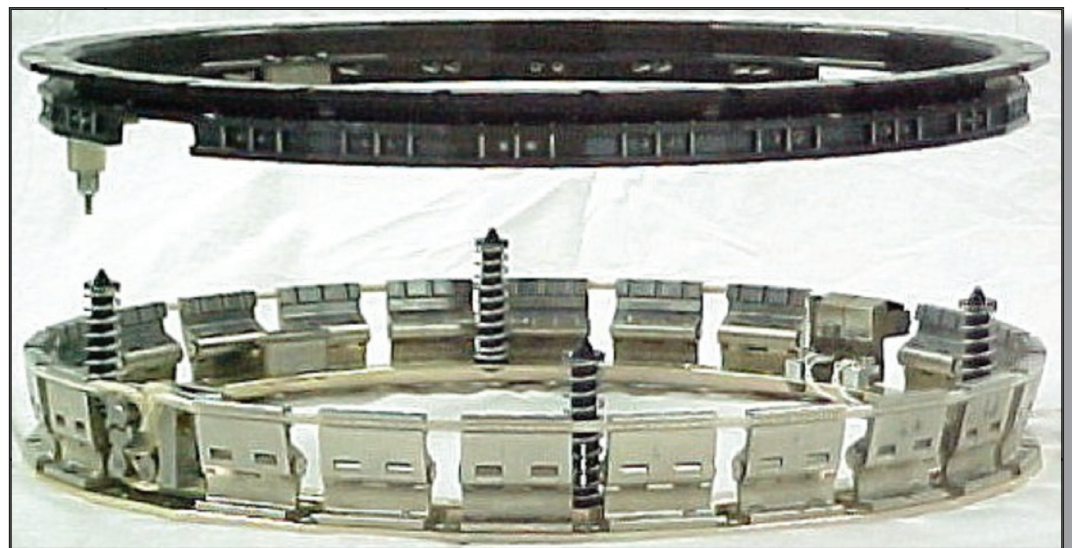
Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force



Success Story

LIGHTBAND SEPARATION SYSTEM



Planetary Systems Corporation (PSC) of Silver Spring, Maryland, developed a system called Lightband, under a Small Business Innovation Research (SBIR) contract with the Space Vehicles Directorate, to provide a low-cost, low-mass, non-pyrotechnic separation system for small spacecraft. Directorate engineers flight-demonstrated the Lightband system on the Kodiak Star Mission in Kodiak, Alaska. The Department of Defense will use the Lightband system in over 10 spacecraft missions including the Space Test program's CAPE small satellite launch system, XSS-11, and the University Nanosat program.



Air Force Research Laboratory
Wright-Patterson AFB OH

Accomplishment

PSC developed and demonstrated a low-shock separation system for use with small satellites. Recent activities improved and expanded the initial design. As a result, the Lightband separation system has become the baseline for many future Air Force and National Aeronautics and Space Administration missions.

Background

Existing pyrotechnic clamp-band separation systems are not suited for small satellite applications; their high-shock separation event is too close to the sensitive electronics on a small satellite. The PSC SBIR effort demonstrated a new class of non-pyrotechnic, low-shock separation systems for small satellite applications.

The standard Lightband system uses a tensioned line and hinged leaf retaining latches to join the Lightband upper and lower rings. When the latches are released a set of separation springs push the rings apart with the desired velocity.

PSC added, through the use of simple design features, the benefits of low mass and low cost. Typical side-by-side comparisons with traditional bolt pyrotechnic separation systems result in a shock load reduction with less total and flyaway mass at approximately half the cost.

In addition, as part of an ongoing enhancement to the Lightband separation system, PSC is developing a motorized activation mechanism. Once completed, this will allow for virtually unlimited testing of the actual flight hardware with no consumable parts—a feature that is currently not available in any spacecraft separation systems.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-VS-03)